may be mentioned "Notes pour Servir à l'Histoire du Terrain de Craie dans le S.E. du Bassin Anglo-Parisien." To his sojourn in northern Africa we owe the numerous works on the geology of that region, and one of them, the "Essai d'une Description géologique de l'Algérie," was awarded the Grand Prix des Sciences physiques. A most important work on "Les Ammonites du Crétacé supérieur de l'Algérie," was published in the Memoirs of the Geological Society of France in 1896–7. He also made a special study of the stratigraphy of the Cretaceous rocks of France and Belgium.

Péron was a correspondant of the Academy of Sciences. In him geology loses one of its most conscientious and disinterested students, one who, while honours were showered upon him, found his greatest delight in assisting his younger *confrères* in the elucidation of some difficult problem in stratigraphy.

NOTES.

A Royal Commission has been appointed by the King to make an inventory of the ancient and historical monuments and constructions connected with or illustrative of the contemporary culture, civilisation, and conditions of life of the people in Wales from the earliest times, and to specify those which seem most worthy of preservation. The commissioners are:—Sir John Rhys, University of Oxford; Prof. E. Anwyl, University College of Wales, Aberystwyth; Prof. R. C. Bosanquet, University of Liverpool; Mr. E. Vincent Evans; Alderman Robert Hughes, J.P.; Rev. Griffith Hartwell Jones; and Lieut.-Colonel W. Llewelyn Morgan, R.E. The secretary is Mr. Edward Owen, of the India Office, S.W., and the assistant secretary Mr. P. E. Thomas. We warmly congratulate Wales. We presume there are no ancient monuments in the other parts of Britain.

We regret to learn that Prof. Kamerlingh Onnes's account of his researches on the liquefaction of helium is delayed by illness brought on by overwork. We hope, however, to be able to print an authoritative description of the investigations shortly.

We learn from *Science* that by a recent decree of the Government of Peru, issued by President Pardo, the time of the seventy-fifth meridian west of Greenwich was on July 28 adopted as the national standard time for the whole of Peru. The meridian is only a few minutes from that of Lima, and runs almost exactly through the middle of the country. All timepieces throughout Peru will now coincide with those in the United States where eastern time is kept. Peru is the first South American republic to adopt the world standard.

It is proposed to publish reproductions of the collection of 338 portraits of living physicists presented recently in an album to Prof. von Lang, Vienna, in celebration of his jubilee, if a sufficient number of subscribers can be found. Intending subscribers should communicate with Prof. Anton Lampa, Vienna, IX. Türkenstrasse 3. Applications after the publication of the reproductions cannot be considered, as only so many copies will be made as are subscribed for.

We notice with regret that the committee of the Denmark Greenland Expedition has received a telegram announcing that Dr. Mylius Erichsen, the leader of the expedition, and two companions, a Dane and an Eskimo, have perished in a snowstorm while travelling inland. The general work of the expedition has, however, been successfully accomplished, and the whole north-eastern coast of Greenland has been charted. A Reuter message states also that Dr. Erichsen and his two companions who perished with him were driven on to an ice-floe during a snowstorm, and that they drifted away from land. Their provisions being exhausted, the explorers became so weak that they were unable to return to the station. The Eskimo who brought the news arrived in a dying condition, and died immediately after making his report. The expedition left Copenhagen on June 24, 1906, and its main object was to map the little-known parts of north-east Greenland and collect material for the study of ethnological, biological, and seismological questions in those regions.

The next meeting of the Australasian Association for the Advancement of Science, which will be held at Brisbane in January, 1909, provides an opportunity for the younger generation of scientific workers to bring the results of original work before an influential and interested audience in the Antipodes. At the meeting there will be gathered together most of the leading representatives of scientific and engineering societies of Australasia, and also men holding high administrative or consultative positions under the various governments. Papers from British contributors will be sure to receive marked attention, and the authors' names will be introduced to important people in a portion of the globe where competition for vacant posts is less keen than it is in Europe or the United States. Mr. K. Swanwick, honorary secretary of Section A (Astronomy, Mathematics, and Physics) of the association, asks us to say that original papers from the British Isles will be heartily welcomed in his section; for, in the absence of the large and well-equipped laboratories of the older countries, it is unlikely that such papers by local workers will be numerous. Communications should be sent to Mr. Swanwick at Celtic Chambers, George Street, Brisbane, as early as possible, and the final date for receiving papers is December 26, 1908.

On Saturday, August 8, Mr. W. Wright made a remarkable flight with his aëroplane at the Hunandières racecourse, Le Mans, in the presence of leading members of the Aéro Club of France. The aëroplane rose easily to a height of 30 feet or 40 feet, and travelled over a course of about 2500 feet in one minute forty-five seconds, returning within 50 feet from the point of departure under the complete control of the aëronaut. On Monday, August 10, Mr. Wright made his machine describe a figure of eight twice in the air, and then returned to the starting point without any difficulty. In another flight, on Tuesday, he described three wide circles at various altitudes. The flight lasted three minutes forty-three seconds, and the aëroplane travelled at a speed of 65 kilometres an hour.

Further particulars of the voyage of Count Zeppelin's airship on August 4, and its subsequent unfortunate destruction, can now be added to the information available when we went to press last week. It appears that the voyage from Friedrichshafen, which was left at 6.45 a.m., to Mannheim—a distance of about 360 kilometres—was accomplished in eight hours. When Count Zeppelin landed near Oppenheim about 6 p.m., the airship had been eleven hours continuously in the air, but the average speed for the whole voyage was reduced, owing to a defective motor, to 36 kilometres an hour. The return voyage from Mainz to Echterdingen, where Count Zeppelin landed on the morning of August 5—to await fresh supplies of hydrogen rendered necessary by leakages in the balloon—took eight hours, though the distance was only 200 kilometres. According to Reuter, at Echterdingen, a sudden violent thunderstorm breaking over the town struck the balloon at its moorings and blew one of the cars into the air. The car fell back, striking the ground, and a motor exploded, setting fire to the adjoining parts of the airship. Several soldiers helping to hold down the airship were dragged into the air with the ascending car, and severely injured by the explosion. The blazing airship was caught by the storm and driven up into the air, where it was completely destroyed, and the framework blown away by the storm. A *Times* correspondent states that the most probable explanation of the disaster appears to be that when the airship was torn from its moorings by the force of the sudden hurricane the machine was brought into violent collision with trees and other obstacles, with the result that the benzene exploded and set fire to the whole fabric. The German Government has sanctioned the payment to Count Zeppelin of the grant of 25,000*l.* voted to him by the Reichstag last spring as compensation for his many years of self-sacrificing creative work in the building of airships. A public subscription has been inaugurated in Germany, and is meeting with a liberal response. Public and private donations to the amount of about three million marks (50,000*l.*) have been promised already toward a great national testimonial to Count Zeppelin.

THE oyster-fishery in the Lim Fjord forms the subject of parts xv. and xvi. of the report of the Danish Biological Station for 1908. After a historical survey of the discovery of oysters and the development of the fishery in this locality, the author, Dr. C. G. J. Petersen, refers to the present unsatisfactory state of the trade, and makes certain suggestions as to the best means of improving it in the future. The most obvious method is by preventing the enormous wastage of "spat" which now takes place, and with this object in view it is suggested that the beds would show a much better yield if they were regularly dredged by Government, or were leased out to private owners on more favourable terms than at present.

IN a paper published in the *An. Mus. Nac. de Buenos Aires*, vol. xvii., on the structure of the scapular arch in edentates and monotremes, as affording evidence of the reptilian descent of those groups, Dr. F. Ameghino recalls that in 1893 Mr. Lydekker proposed a new scheme of nomenclature for the bones of this part of the skeleton in vertebrates. It was shown, for instance, that in dicynodonts there exist a coracoid and metacoracoid, of which the first is represented in edentates, while both occur in monotremes (where the first is generally miscalled epicoracoid and the second coracoid). It follows from this that the so-called coracoid of a bird and a lizard is a metacoracoid. Although Mr. Lydekker's views were strongly opposed at the time of their publication, Dr. Ameghino maintains that they are indisputably correct, and that the revised nomenclature of the bones should be adopted in anatomy.

A SECOND paper by Dr. Ameghino in vol. xvii. of the *Anales* of the Buenos Aires National Museum is devoted to the alleged occurrence of remains of armadillos in the Oligocene of France and Germany. In view of the opinions which have been advanced as to the reptilian nature of these remains (which consist mainly of the plates of the dermal head-shield), the author states that he can no longer definitely assert that they indicate the occurrence of armadillos in the European Oligocene. At the same time, he refers to a figure of the microscopic structure of one of these bony plates, published by Filhol, which accords very closely with similar figures of armadillo plates, and differs markedly from the structure presented by the plates of certain lizards. To settle the question, it is urged that sections of the plates of the so-called Necrodasypus should be compared with those of the dermal armour of the approximately contemporaneous lizard Placosaurus.

IN a paper published by the Carnegie Institution of Washington (No. 101) under the title of "The Variation and Correlations of Certain Taxonomic Characters of Gryllus," Mr. F. E. Lutz records the results of a series of observations undertaken for the purpose of ascertaining whether detailed measurements of those parts of the body on which the distinction between the various American species of crickets mainly rests would afford absolute data for the determination of such species. The observations, which relate to an enormously large series of specimens, were intended to apply to the question of the exact definition of species in general. So far as American crickets are concerned, the results show that in the matter of length of various parts—especially the ovipositor—there is an almost complete gradation from the maximum to the minimum dimension, and consequently that the half-dozen or so species which have been named have no real existence in nature. Nevertheless, it is urged, the recognition of such species is advisable for convenience of reference. Local conditions of environment have, it is true, some effect on the taxonomic characters, such as the length of the ovipositor, but very similar variations occur in one and the same locality. It is added that these insects exhibit a dimorphic feature—namely, large or small wings—quite independent of the so-called specific characters.

IN his presidential address delivered before the annual meeting of the Linnean Society, held on May 24, Prof. W. A. Herdman discussed the question whether the practice of taking small samples of the oceanic plankton in particular localities at certain intervals of time affords a sufficient and trustworthy means of ascertaining the micro-organic contents of the oceans as a whole. As the result of observations at Port Erin, it has been ascertained that there exists, in the first place, a sequence and periodicity of stages in the life-history of these organisms; secondly, there are irregularities due to the interaction of organisms, as when one group serves as food to another; while, thirdly, there occur periodical changes and abnormalities of either time or abundance brought about by the nature of the water or by climatic conditions, which largely affect the plankton. From these facts it is clear that observations taken every three months, or even fortnightly, are inadequate to give a proper idea of the plankton of any one area, and it is therefore necessary to have samples taken weekly, and during three months of the year daily, to furnish a trustworthy basis of calculation. In the course of his address, the president directed attention to the occurrence in the Irish plankton of an extraordinarily large number of what are usually regarded as "oceanic" types.

THE report of the director of the Royal Botanic Gardens, Ceylon, for 1907, gives cover to the reports of the various officers attached. The post of scientific assistant to the director has been abolished. In connection with the curatorship of the gardens, Mr. H. F. Macmillan refers to the flowering of the giant bamboo, *Dendrocalamus giganteus*, and the giant orchid, *Grammatophyllum speciosum*; the bamboo has been flowering irregularly for three years, producing a proportion of fertile seed. An indigenous liliaceous plant, *Ophiopogon intermedius*, is recommended for edgings under the shade of trees. *Colvillea* *racemosa* and *Artocarpus cannoni* are two of the new introductions into the gardens; also the Lombiro and Manicoba rubber trees, and Manihot "von Piauhy."

The records of Mr. T. Petch, Government mycologist in Ceylon, provide information regarding the manner in which certain fungi show different propensities in different countries. The "bleeding disease" of cocoanut trees in Ceylon is traced to the fungus *Thievalopsis ethaceticus*, that is known in the West Indies and Java as causing a disease of sugar-cane. *Pestalozzia palmarum*, which attacks cocoanut palms in the latter countries, produces the "gray blight" usually associated with tea in Ceylon. With regard to this species of Pestalozzia, Mr. Petch does not accept the European reference to a species *guepini*, and generally holds the view that identifications cannot be satisfactorily made on dried specimens sent to Europe.

Mr. A. S. Hitchcock has rendered good service, more especially to American botanists, in making a careful examination of type-specimens of American species of grasses deposited in European herbaria. The results of his study of the grasses described by Linnæus, Gronovius, Sloane, Swartz, and Michaux are collated in the Contributions from the United States National Herbarium (vol. xii., part iii.). The author pursued his investigations in the herbaria of the Linnean Society of London, the Natural History Museums at South Kensington and Stockholm, and the Museum d'Histoire naturelle at Paris.

The second number of *Parasitology* (i., No. 2) contains important papers on ticks, spirochætæ, and piroplasmata (by Prof. Nuttall), and one by Dr. Castellani describing a spontaneous liver abscess in a monkey caused by an amœba.

Prof. Leduc gives an interesting account of the osmotic "growths" which develop when a fragment of a soluble calcium salt (nitrate or chloride) is immersed in a solution of sodium carbonate. The calcium carbonate formed develops into curious outgrowths resembling those of the lower plants, and having a cellular structure analogous to that of the latter (Festband der *Biochemischen Zeitschrift* für H. J. Hamburger, 1908, p. 280).

We have received an advance copy of Messrs. Merck's report of recent advances in pharmaceutical chemistry and therapeutics for 1907. Within a compass of 262 pages a large amount of information on new remedies, &c., is given, and the report should be in the hands of every medical man. It is sent free on application to 16 Jewry Street, E.C.

The Livingstone College Year-book for 1908 contains the annual report, notes on experiences of former students and on climatic outfit and hygienic questions, and a review of the progress of tropical medicine, together with a reprint of Sir Patrick Manson's opening address on tropical research. The Livingstone College aims to give elementary instruction in the principles of medicine and surgery to missionaries.

A clear and somewhat detailed statement of the present position and recent progress of the science of comparative psychology is to be found in the June number of the *Psychological Bulletin*. Prof. John B. Watson contributes an article on the power of imitation in monkeys, which sets in vivid contrast the utterances of popular anecdote and scientific experiment. Working with rhesus and cebus monkeys, he has found it impossible to obtain any conclusive evidence for the presence of the function of imitation in its higher forms. This result is diametrically opposed to that previously obtained by Prof. Hobhouse in a series of similar—in part identical—experiments. Prof. Watson suggests that the monkeys used by Prof. Hobhouse had previously learnt a variety of tricks similar to those demanded by the experiments. In his own work this source of error had been carefully guarded against. The long review of the psychological literature of the past year which follows this article brings out very vividly the signal success which is attending the application of the experimental method to the problems of animal psychology.

We have received from the Canadian Department of Mines, geological survey branch, a couple of admirably executed maps. One is a special contoured map of Rossland, British Columbia, drawn on a scale of 400 feet to the inch by Mr. W. H. Boyd, and the other is a topographical map of the Yukon territory on a scale of 32 miles to the inch, showing the position of the gold, silver, copper, and coal deposits.

The annual progress report of the Geological Survey of Western Australia for the year 1907 (Perth, 1908) records much useful work done during the year. The account has been arranged upon slightly different lines from those adopted hitherto, in that all reports of a scientific character have been omitted, and their places taken by abstracts pending their publication in the Bulletins of the survey. Particulars are given of the results of boring for coal at various localities, of the reported gold discoveries at Mundijong, and of investigations of the wolfram and tin deposits near Brookton, and of the copper deposits at Yandanooka. Several minerals not previously noted as occurring in the colony were noted during the year, namely, meymacite (hydrated oxide of tungsten), tagilite (hydrated phosphate of copper), amazon-stone, zoisite, and hemimorphite.

The elaborate character of the work being carried on by the United States Geological Survey in the investigation of the fuel values and possibilities of the coals and lignites of the United States is well shown in the report on the United States fuel-testing plant at St. Louis, Missouri, from January 1, 1906, to June 30, 1907 (Bulletin No. 332). The experts responsible contribute reports on field work, on the work of the chemical laboratory, on steaming tests, on producer-gas tests, on washing tests, on coking tests, on cupola tests for coke, and on briquetting tests. The briquetting plant has developed new possibilities in the utilisation of slack coal and of anthracite culm as an efficient locomotive fuel, and the producer-gas investigations have shown the availability of bituminous coal, lignites, and peat rich in volatile matter, for the production of power. We have also received a report by Mr. R. L. Humphrey and Mr. J. A. Holmes on the organisation, equipment, and operation of the structural materials testing laboratories at St. Louis, Missouri (Bulletin No. 329). Funds have been supplied to the Geological Survey by Congress for investigations of structural materials with the view of reducing the cost and improving the quality of the materials used in building and construction work. Equipment of an elaborate character has been purchased, and much work has been done in studying the properties of concrete and reinforced concrete, and in testing various materials to determine their relative value for mortar and concrete.

Dr. E. J. Spitta has published in the Journal of the Quekett Microscopical Club for April, recently received, a short address on a method of photographing very translucent diatoms at high magnifications. The necessary high magnification requires the use of rapid plates, and with these the image of each dot or pearl is seen to be surrounded by a halo of fog, due to optical causes. To remove this the author makes a copy of the negative through a positive, using at one or both stages of the process a plate of much lower speed than could be used for the original negative. By this means the contrast is increased, and the foggy appearance thus eliminated.

In a pamphlet entitled "Ratio Coordinates and Carnot's Theorem" (London: Whittaker and Co., 1908, price 1*s.* net), "J. L. S. H.," of East London College, suggests a method of dealing with certain theorems in analytical projective geometry of quadric curves associated with triangles. His "ratio coordinates" of a point practically represent the ratios, with their signs changed, of the triangular or areal coordinates, their product thus being −1. Equations expressed in terms of these coordinates are neither homogeneous nor symmetrical, the equations of a straight line and a quadric being of the form of linear and quadric equations in two variables, namely, one of the coordinates and the reciprocal of another coordinate.

We have received from the director of the Zi-ka-wei Observatory (near Shanghai) a copy of a new and carefully prepared word-code for transmitting typhoon and gale warnings, with particulars as to direction of motion, &c., to such lighthouses on the Chinese coast as possess telegraphic connection, and to some foreign places. A code has been in use for many years, and has from time to time been improved, but it became necessary to reduce, so far as possible, the work of the telegraph companies, who generously transmit the messages gratuitously. In our note of May 23, 1907, it was explained that captains of vessels leaving port were invited to repeat, under certain restrictions as to time, &c., the warnings they had seen in the harbours to lighthouses not yet electrically connected. The plan appears to have met with success, and orders to cooperate in passing on the signals in a modified and simple form have been issued by several naval commanders to their respective fleets.

The results of an investigation of the connection between band and line spectra of the same metallic elements were described by Prof. W. N. Hartley, F.R.S., before the Royal Dublin Society on June 16. The author concludes that band spectra belong to the elementary atoms, and may be considered as caused, not only by the motion of translation of the atoms themselves, but also of the vibratory movements of the component parts within the atoms. The banded flame spectra of lead, antimony, bismuth, tin, zinc, cadmium, copper, silver, and gold are the spectra of the atoms. The lines of these elements also are the spectra of the atoms, and it is inferred therefrom that the component parts of the atoms are in a state of dissociation. It is concluded that the metallic elements with monatomic molecules which exhibit two spectra—one of lines and the other of bands—can exist in two different conditions, the difference being in the larger amount of energy associated with the atom which exhibits a line spectrum.

The Journal of the Röntgen Society for July contains a paper by Mr. W. Duddell, the president of the society, on the measurement of the current through a Röntgen-ray tube. The current was derived from a 12-inch induction coil, the primary of which was supplied from the mains at 200 volts through a mercury turbine interrupter giving about seventy-five interruptions per second. The secondary current was rectified by a point and cup spark gap, and passed in series through the tube, an oscillograph, a thermoammeter, and a galvanometer, by means of which the shape of the current curve, the mean square current, and the mean current were respectively determined. The current curve was almost invariably a triangle with a very short base and a height from 30 to 45 milliamperes, the mean current varied between 0·5 and 1·2 milliamperes, and the root mean square current between 2 and 5 milliamperes. Mr. Duddell is disposed to think that there is a connection between the maximum value of the current and the "hardness" of a tube for a given mean current.

The most recent experiments of Mr. H. N. Morse on the osmotic pressures of sugar solutions, as described in the *American Chemical Journal* for June and July, are characterised by so marked an improvement on the excellent results already obtained as to merit much greater attention than the titles of the papers would suggest. The earlier sources of error due to variations of temperature have been overcome by improved thermostatic methods, those due to the change of volume resulting from the displacement of the manometer connections have been reduced to insignificant proportions by improved mechanical arrangements, and the last remaining disturbance, due to the dilution of the contents of the cell during the periods of closing and opening, has now been got rid of. As a result, the errors of measurement have been reduced from an atmosphere or more to a few hundredths of an atmosphere only on pressures up to 24 atmospheres. In the experiments on glucose, eight duplicate determinations showed a deviation of 0·01 atmosphere only, whilst the two remaining pairs differed by 0·04 atmosphere. Observations of this degree of accuracy make it possible to follow, not only the main course of the osmotic pressure laws, but also the deviations from these laws, to which so much attention is being paid at the present time.

Prof. W. F. Osgood has given in the Annals of Mathematics (2), ix., 3, a simple proof of the rule for the differentiation of an integral when the independent variable enters into the integrand and also into the limits. The proof in question involves an application of Green's theorem. It may be noticed that for teaching purposes a geometrical proof is very useful, and probably sufficient.

At the meeting of the Société française de Physique on July 3, an absolute torsion electrometer due to M. E. Salmon was exhibited. The arrangement follows that of the Kelvin absolute electrometer, the attracting plate, the attracted disc, and the guard ring being, however, vertical instead of horizontal. The attracted disc is supported by a fibre in such a way that when no electrical force acts on the disc its front surface is coplanar with that of the guard ring. When the potential to be determined is applied to the attracting plate, the disc moves outwards from its normal position, and is brought back by twisting the head of the suspending fibre through the requisite angle. The torsional constant of the fibre is determined by means of a thread attached to the centre of the disc, which passes over a pulley and supports a weight. The instrument has been used to measure potentials between 0·05 volt and 40,000 volts, and has an accuracy of about 1 per cent.

Messrs. T. C. and E. C. Jack will publish shortly a popular work entitled "The Wild Beasts of the World," edited by Mr. Frank Finn. The work will be illustrated with 100 reproductions in full colours from drawings, and will be published in seventeen parts at a price of one shilling net each part.

MESSRS. ROWLAND WARD, LTD., announce for publication next month a concise work on British birds, entitled "The Sportsman's British Bird Book," by Mr. R. Lydekker, F.R.S. The volume will be illustrated, and will appeal to the field-naturalist as well as to the sportsman.

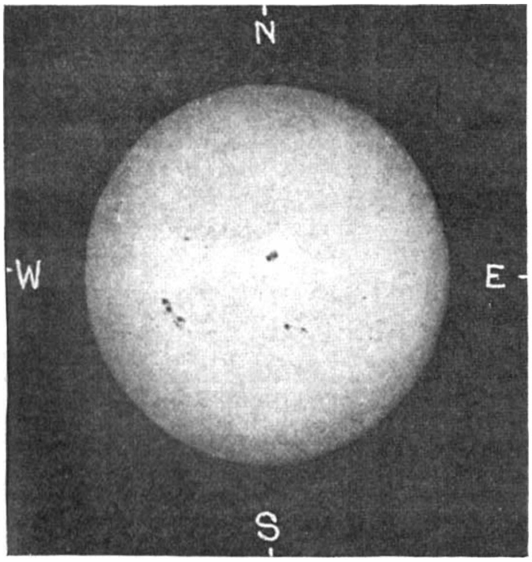
THE *Yorkshire Weekly Post* is publishing an interesting series of articles on "Natural History as a Shakespearean Study." The author is evidently a careful naturalist and a painstaking student of Shakespeare. The admirable natural history notes which occur week by week in our contemporary have been arranged under the present editor for the last fifteen years.

THE Sanitary Publishing Company, Ltd., has published a second edition of "By-laws as to House Drainage and Sanitary Fittings made by the London County Council," annotated by Mr. Gerard J. G. Jensen and another. The new by-law made under the Metropolis Management Acts (By-laws) Amendment Act, 1899, which came into force in 1903, has been included in the new edition. The work also contains references to the by-laws of various other cities in the United Kingdom. The price of the volume is 3*s*. 6*d*. net.

OUR ASTRONOMICAL COLUMN.

SUN-SPOTS VISIBLE TO THE NAKED EYE.—The accompanying photograph of the sun, taken at South Kensington at 2h. 45m. (G.M.T.) on August 6, shows the large groups of sun-spots which have recently been visible to the naked eye.

A feature of the most recent sun-spot maximum (1905–6) has been the number of naked-eye groups that has been observed, and it is somewhat remarkable that at the present time, two or three years after the epoch of the maximum, there should be two such groups visible at the same time. Both the group in the S.W. quadrant and that near the centre were quite easily seen for several days after August 3, a dark glass being the only equipment necessary. The former first appeared, as a few small spots, at the limb on July 30, and developed until, as the photograph shows, it was more than 100,000 miles long on August 6. The group near the centre was first seen, at the limb, on July 31, whilst the smaller group preceding it apparently formed on the disc and was first seen on August 3.



Photograph of the sun's disc, 1908, August 6, 2h. 45m.

A BRILLIANT FIREBALL.—Mr. Denning writes:—"While watching the eastern sky for meteors on July 28 at 11h. 6m., the north-west region was illuminated by the outburst of a very fine meteor at a low altitude, and a few days later brought me letters from several of its fortunate spectators. An observer at Brynmawr, South Wales, says he was startled by the sudden illumination, and turning round to N.W. he saw a ball of fire drop there, leaving a bright streak for a short time. The Rev. W. F. A. Ellison, of Fethard, Waterford, describes the meteor as unusually magnificent. The flash was more vivid than lightning, and there was a momentary streak left about 4° to the right of Polaris. Path about 325°+80° to 115°+65°. Flight very swift, less than half a second. An observer at Naas, Kildare, wrote a description to the *Irish Times*, in which he says that the brilliancy of the fireball was so strong that it bathed the whole country in daylight for three or four seconds. It left a short streak, like a red bar, between γ and β Lyræ, but not quite connecting these stars. The meteor was also seen at Newtownwards, in co. Down, and by many others in different places. The radiant was at 302°+23°, and the height of the object about eighty-two to forty miles above Tullow and Kildare. The length of visible path extended more than fifty miles, and the velocity was very great and equal to 100 miles per second according to Mr. Ellison's estimate. The fireball would have fallen to the earth in west Meath could it have withstood disruption during a further flight of forty-eight miles. It was by far the finest meteor of the July epoch, and this is a period specially noted for the abundance and brilliancy of its meteoric phenomena. The shower in Vulpecula, near Sagitta, has frequently been observed at Bristol. This year, between July 22 and August 3, I recorded twelve meteors from it; they were swift and generally inconspicuous objects. Three were seen (one of mag. 3 and two of mag. 5) on the night of the fireball, and this amply proves that meteors great and small are commingled in showers of this character. The swiftness of motion is noteworthy. We should expect slow meteors from a radiant at 302°+23° at the close of July."

THE LARGE METEOR OF JUNE 28.—Other observations having come to his knowledge, Mr. Denning has been able to compute the path of the supposed bright Scorpiid seen by him on June 28. He finds that the observed path commenced, at a height of sixty-nine miles, near Mere (Wiltshire), and ended, at a height of forty-five miles, over Kineton (Warwickshire), the length of its path being eighty-four miles and its velocity twelve miles per second. The radiant was at 237°, −18°, about 15° W. of the usual Scorpiid radiant, so it appears that this object was in reality a member of the neighbouring Librid shower (the *Observatory*, No. 399, p. 318, August).

OBSERVATIONS OF ENCKE'S COMET.—Encke's comet was photographed by Mr. Woodgate, with the 13-inch astrographic telescope at the Cape Observatory, on five nights from May 27 to June 5, and the reduced positions, for 1908·0, are published in No. 4266 of the *Astronomische Nachrichten* (p. 297, August 1). The comet is recorded as being very faint, and it is stated that the images are diffused and irregular in form, the diameter exceeding 1′ of arc.

A VARIABLE STAR OF REMARKABLY SHORT PERIOD.—The examination of the Paris *carte du ciel* plates has led M. Baillaud to the discovery of another variable star of which the period of light-variation is a remarkably short one. The star in question is situated in the position (1900) R.A. = 14h. 41m. 31·80s., $\delta = +23^\circ\ 43'\ 59''\cdot 7$, and its range of variation is between magnitudes 12·8 and 14·3. The change from minimum to maximum takes about 0·070d., or 1h. 41m., and the complete period is either 7h. 54m. 26s. or 11h. 51m. 43s. The star is of the δ Cephei type, and there is a suspicion of a secondary maximum 1h. 40m. after the principal maximum (*Comptes rendus*, No. 4, p. 230, July 27).